Mastery Assessment of Unit 2 (Practice version 117)

Question 1

Let f represent a function. If $f[4] = 30$, then there exists a knowable solution to the equation below.

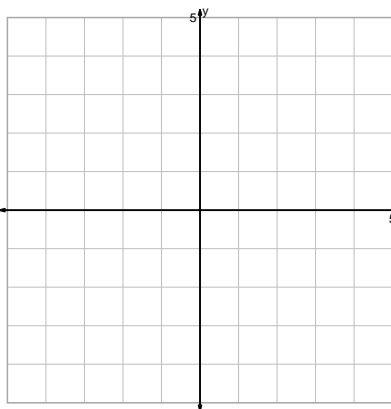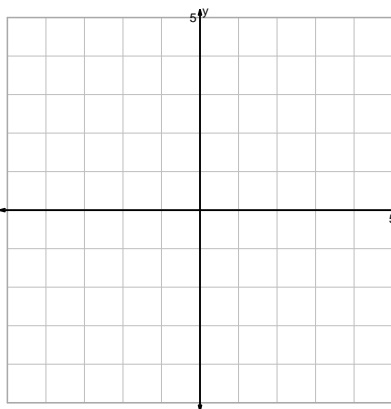$$y = \frac{f[2(x-17)]}{15} + 23$$
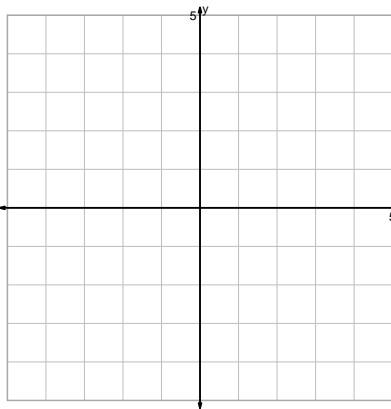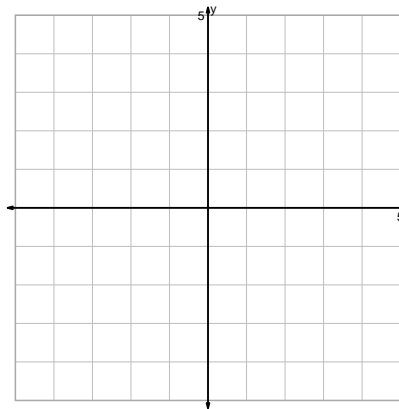
Find the solution.

$x =$

$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
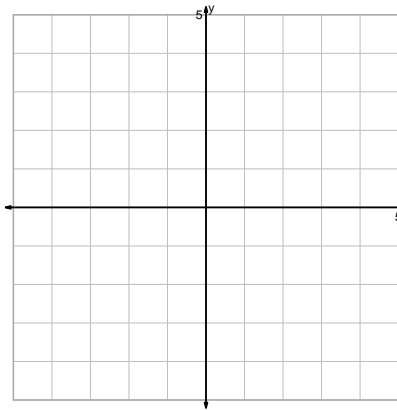
$y = \left(x + 2\right)^3$
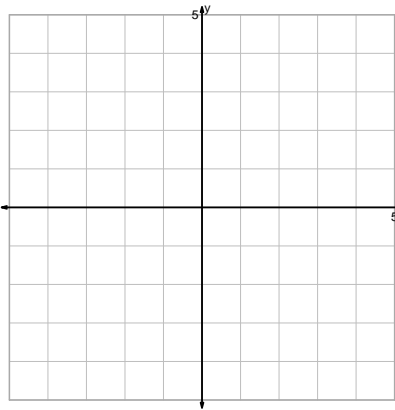

$y = -\sqrt{x}$

$y = 2 \cdot x^2$

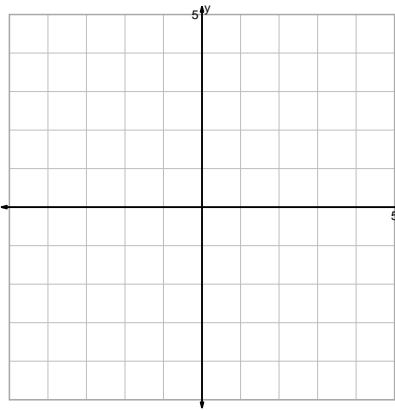$y = 2^{x-2}$

$y = \left(2x\right)^3$
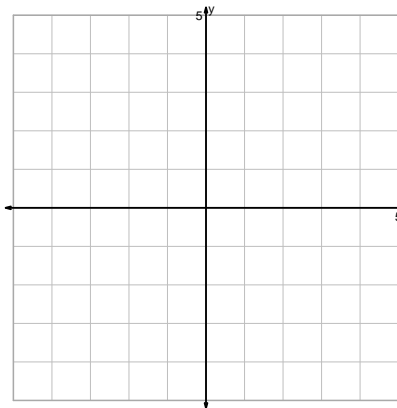
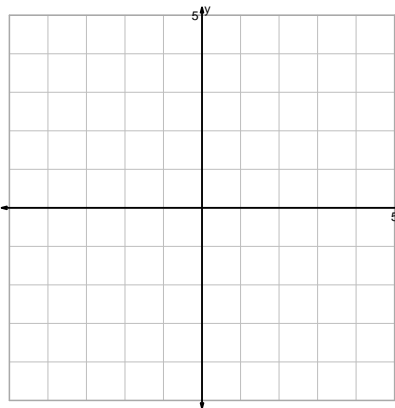$y = \log_2\left(-x\right)$

$y = \dfrac{\sqrt{x}}{2}$

$y = x^2 + 2$

$y = \log_2\left(\dfrac{x}{2}\right)$
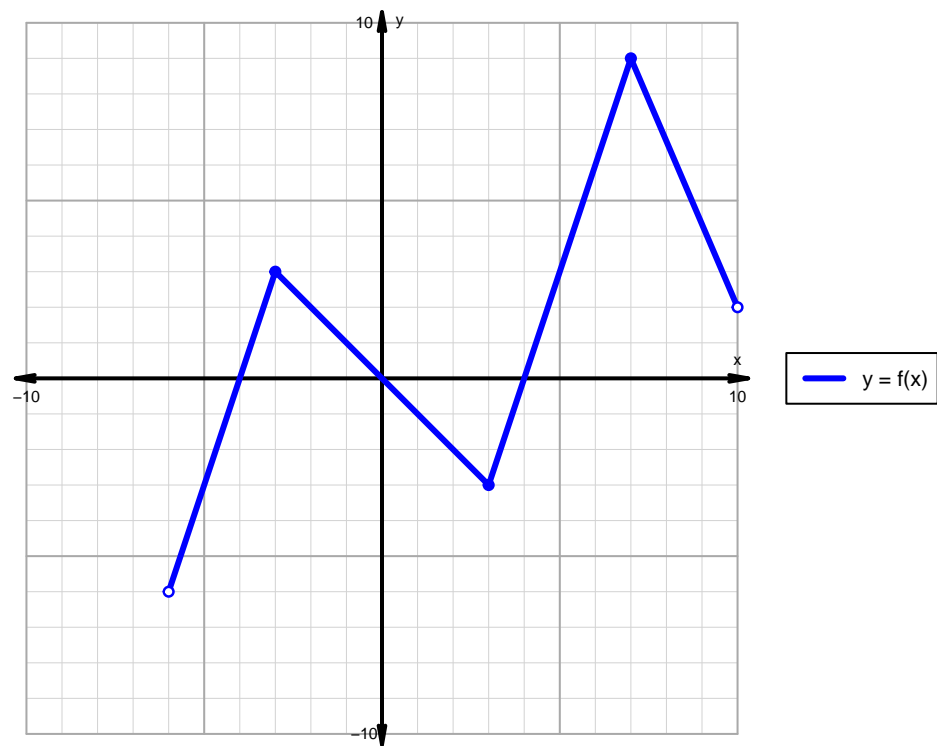
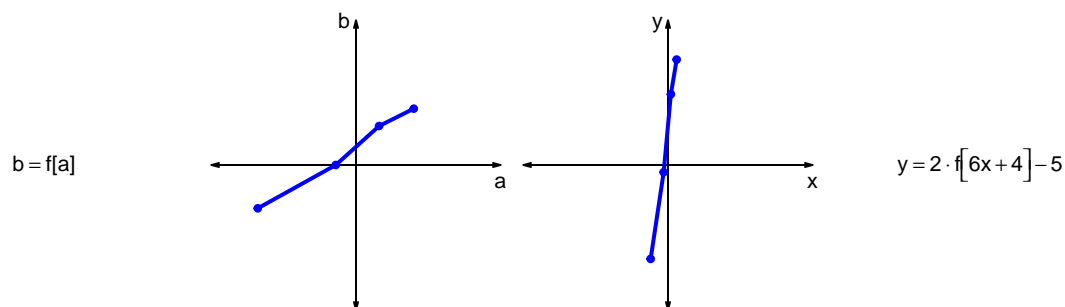$y = \sqrt[3]{x} - 2$

Question 3

A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 2 \cdot f[6x + 4] - 5$ are represented below in a table and on graphs.

a	b	x	y
-68	-30	-12	-65
-14	0	-3	-5
16	27	2	49
40	39	6	73

$b = f[a]$

$y = 2 \cdot f\left[6x + 4\right] - 5$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 2 \cdot f[6x + 4] - 5$?

Question 5

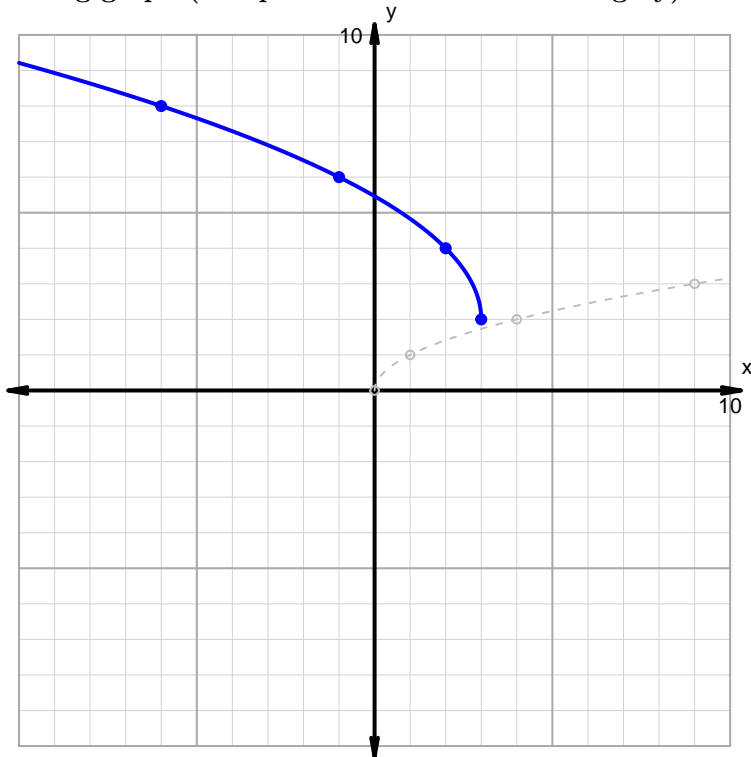A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate right by distance 3.

Vertical transformations

1. Translate up by distance 1.
2. Vertical stretch by factor 2.

Resulting graph (and parent function in dashed grey):

- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = -3 \cdot |x - 4| + 6$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	